

What is Claimed is:

1. A method of delivering a gene encoding interferon to a target cell in a mammal, resulting in expression of the gene as a protein and secretion of the protein by the cell, the method comprising administering to the mammal a molecular complex comprising a gene encoding interferon releasably linked to a conjugate of a nucleic acid binding agent and a ligand which binds to a component on the surface of the target cell, wherein the gene is operably linked to genetic regulatory elements necessary for expression, processing and secretion of the encoded protein by the target cell.

2. The method of claim 1 wherein the gene encodes human interferon.

3. The method of claim 1 wherein the human interferon is IFN- α .

4. The method of claim 1 wherein the gene encodes human IFN- α 2b.

5. The method of claim 1 wherein the gene is contained in an expression vector.

6. The method of claim 1 wherein the nucleic acid binding agent is a polycation.

7. The method of claim 6 wherein the polycation is polylysine.

8. The method of claim 1 wherein the ligand comprises a terminal carbohydrate residue.

9. The method of claim 1 wherein the ligand binds to the asialoglycoprotein receptor.

10. The method of claim 1 wherein the ligand is an asialoglycoprotein.

11. The method of claim 1 wherein the ligand is selected from the group consisting of galactose, mannose and lactose.

12. The method of claim 1 wherein the molecular complex is administered intravenously.

13. A molecular complex comprising a gene encoding interferon releasably linked to a conjugate of a nucleic acid binding agent and a ligand which binds to a component on the surface of a cell, the gene being linked to genetic regulatory elements necessary for expression, processing and secretion of the encoded product by the cell.

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14. The molecular complex of claim 13 wherein the gene encodes human interferon.

15. The molecular complex of claim 13 wherein the human interferon is IFN- α .

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16. The molecular complex of claim 13 wherein the gene encodes human IFN- α 2b.

17. The molecular complex of claim 13 wherein the gene is contained in an expression vector.

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18. The molecular complex of claim 13 wherein the nucleic acid binding agent is a polycation.

19. The molecular complex of claim 18 wherein the polycation is polylysine.

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20. The molecular complex of claim 13 wherein the ligand comprises a terminal carbohydrate residue.

21. The molecular complex of claim 13 wherein the ligand binds to the asialoglycoprotein receptor.

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22. The molecular complex of claim 13 wherein the ligand is an asialoglycoprotein.

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23. The molecular complex of claim 13 wherein the ligand is selected from the group consisting of galactose, mannose and lactose.

24. A composition comprising the molecular complex of claim 13 and a pharmaceutically acceptable carrier.

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25. A method of recombinantly expressing interferon in culture comprising incubating a host cell with a molecular complex comprising a gene encoding interferon releasably linked to a conjugate of a nucleic acid binding agent and a ligand which binds to a component on the surface of the host cell, the gene being linked to genetic regulatory
5 elements necessary for expression, processing and secretion of the encoded interferon protein by the host cell.

26. The method of claim 25 wherein the gene encodes human IFN- α .

10 28. The method of claim 25 wherein the conjugate comprises a polycation linked to a ligand for the asialoglycoprotein receptor.

29. A method for treating hepatitis infection in a patient comprising administering to the patient a molecular complex comprising a gene encoding human interferon- α
15 releasably linked to a conjugate of a polycation and a ligand which binds to the asialoglycoprotein receptor present on the surface of liver cells, the gene being in a form suitable for expression, processing and secretion of the encoded product by the liver cells.

30. The method of claim 29 wherein the gene encodes human IFN- α 2b.
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